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NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/720,742	YONGE ET AL.	
	Examiner	Art Unit	
	CHIRAG R. PATEL	2454	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

Applicant's arguments, see pages 1-6, filed July 20, 2009, with respect to the rejection(s) of claim(s) 1-70 under 35 U.S.C. 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 12, 17-19 and 65-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) in view of Heer et al. – hereinafter Heer (US 6,028,933) and Cimini, Jr. et al. – hereinafter Cimini, Jr. (US 7,519,030).

As per claim 1, Alapuranen discloses a method of operating in a network in which a plurality of stations communicate over a shared medium, comprising

dividing the encapsulated stream into a plurality of pieces with each piece capable of being independently retransmitted; and ([0029]; dividing the length of MPDU by a system constant for a maximum segment size)

supplying low level data units, ([0029]; physical layer packet equated as a low level data unit) at least some of the low level data units each containing a plurality of the pieces into which the encapsulated stream was divided, ([0029]; physical layer packet which can consist of single or multiple segments in a data stream)

Alapuranen fails to disclose providing a physical layer for handling physical communication over the shared medium, providing a high level layer that receives data from a station and supplies high level data units for transmission over the medium, providing a MAC layer that receives the high level data units from the high level layer and supplies low level data units to the physical layer, at the MAC layer, encapsulating content from a plurality of the high level data units into a stream of sub-frames and at least some of the low level data units containing boundary demarcation information indicating boundaries between the sub-frames in the stream,

Cimini, Jr. discloses disclose providing a physical layer for handling physical communication over the shared medium, (Col 2 line 66 – Col 3 line 19; a physical layer (PHY) block 26 connected to the MAC block 24 by a MAC-to-PHY I/O bus 28) providing a high level layer that receives data from a station and supplies high level data units for transmission over the medium (Col 3 lines 51-Col 4 line 2; A MAC Service Data Unit (MSDU) refers to any information that the MAC block has been tasked to transport by upper protocol layers) and providing a MAC layer that receives the high level data units from the high level layer and supplies low level data units to the physical layer. (Col 2 line 66 – Col 3 line 19; a physical layer (PHY) block 26 connected to the MAC block 24 by a MAC-to-PHY I/O bus 28) ; at the MAC layer, encapsulating content from a plurality

of the high level data units into a stream of sub-frames (Col 3 line 51-Col 4 line 2; The MPDU 50 includes a variable length body 52 encapuslated by an MPDU header header 54 and a Frame Check Sequence (FCS) 56. The body 52 corresponds to the MSDU)

Heer discloses at least some of the low level data units containing boundary demarcation information indicating boundaries between the sub-frames in the stream. (Col 14 lines 31-54; The VL PDU segment header 910 of a segment which has not been completely transmitted within a subframe boundary provides total segment length information about its associated PDU segment payload 911. The total length in this illustrative example is shown to traverse the subframe boundary 920 and the remainder of the PDU segment payload 911 is transmitted in the subsequent subframe as PDU segment payload 922)

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose providing a physical layer for handling physical communication over the shared medium, providing a high level layer that receives data from a station and supplies high level data units for transmission over the medium, providing a MAC layer that receives the high level data units from the high level layer and supplies low level data units to the physical layer, at the MAC layer, encapsulating content from a plurality of the high level data units into a stream of sub-frames and at least some of the low level data units containing boundary demarcation information indicating boundaries between the sub-frames in the stream. The motivation for doing do would have been to communicate with any other node on the wireless network (Cimini,JR.; Col 3 lines 20-35) for initial identification of a VL PDU

segment boundary, or for resynchronization after a synchronization loss . (Heer, Col 14 line 63-Col 15 line 7)

As per claim 2, Alapuranen / Heer / Cimini , Jr. disclose the method of claim 1. Cimini, JR. discloses wherein at least some information common to the high level data units is not repeated for each high level data unit encapsulated in the stream. (Col 3 line 61-Col 4 line 2; the MPDU 50 may have the capacity to contain an entire MSDU 52 or only a fragment of the MSDU 52.)

As per claim 3, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 2. Cimini, JR. disclsoes wherin the information common to the high level data units comprises destination and source addresses. (Col 4 line 57-Col 5 line 14; Figures 4A, 4B)

As per claim 4, Alapuranen/ Heer / Cimini, Jr. discloses the method of claim 2. Cimini, JR. discloses wherein the high level data units each comprise a payload, and encapsulating comprises forming the stream comprising the payloads from a succession of high level data units. (Col 3 line 61-Col 4 line 2; Figure 3: item 60)

As per claim 5, Alapuranen/ Heer / Cimini, Jr. discloses the method of claim 4. Cimini, JR. discloses wherein the stream comprises a succession of sub-frames, each

sub-frame comprising a header and a plurality of the payloads. (Col 3 line 61-Col 4 line 2)

As per claim 6, Alapuranen/ Heer / Cimini, Jr. disclose the method of claim 5. Alapuranen discloses wherein each sub-frame is divided into the plurality of pieces ([0029]; dividing the length of MPDU by a system constant for a maximum segment size) capable of being independently retransmitted. ([0016]; failed segments can be retransmitted)

As per claim 12, Alapuranen/ Heer / Cimini, Jr. disclose the method of claim 1. Alapuranen discloses wherein some of the pieces making up a low level data unit ([0029]) constitute retransmitted pieces that failed to be correctly transmitted in an earlier attempt. ([0032])

As per claim 17, Alapuranen/ Heer / Cimini, Jr. disclose the method of claim 5. Alapuranen discloses further comprising further comprising an integrity check value associated with each sub-frame or with a plurality of sub-frames. ([0030])

As per claim 18, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 5. Alapuranen discloses wherein each of the plurality of payloads in a sub-frame have identical length. ([0029])

As per claim 19, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 5. Alapuranen discloses wherein each sub-frame further comprises MAC management information. ([0015])

As per claim 65, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 1. Heer discloses wherein the boundary demarcation information given for a given low level data unit comprises information that indicates whether a boundary between sub-frames exists within the low level data unit. (Col 14 lines 31-54; The total length in this illustrative example is shown to traverse the subframe boundary 920 and the remainder of the PDU segment payload 911 is transmitted in the subsequent subframe as PDU segment payload 922. Length arrow 913 describes the PDU segment payload total length and points to the beginning of the next VL PDU segment header. Pointer Field (PF) 912 provides direct information regarding the byte position of the beginning of the header of the first full PDU segment in the next subframe.)

As per claim 66, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 65. Heer discloses wherein, if such boundary does exist within the low level data unit, the

boundary demarcation information further comprises information that indicates where the boundary occurs within the low level data unit. (Col 14 lines 31-54; Pointer Field (PF) 912 provides direct information regarding the byte position of the beginning of the header of the first full PDU segment in the next subframe; Figure 9: items 912, 920)

As per claim 67, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 66. Heer discloses wherein the information that indicates whether a boundary between high level data units exists within the low level data unit comprises a field having a value that indicates which piece (Figure 9: items 911, 922) in the low level data unit includes the boundary, or having a value that indicates that no boundary exists within the low level data unit. (Col 14 lines 31-54; Pointer Field (PF) 912 provides direct information regarding the byte position of the beginning of the header of the first full PDU segment in the next subframe)

As per claim 68, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 67. Heer discloses wherein the information that indicates where the boundary occurs within the low level data unit comprises an offset indicating a relative position of the boundary within the piece including the boundary. (Col 14 lines 31-54; (Col 14 lines 31-54; Pointer Field (PF) 912 provides direct information regarding the byte position of the beginning of the header of the first full PDU segment in the next subframe)

As per claim 69, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 67. Cimini, Jr. discloses wherein the field is a header associated with the low-level data unit. (Col 6 lines 36-38)

As per claim 70, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 1. Heer discloses wherein at least one of the low-level data units contains a portion of at least one sub-frame, and at least one of the low-level data units contains a different portion of the at least one sub-frame. (Col 14 lines 31-54; The total length in this illustrative example is shown to traverse the subframe boundary 920 and the remainder of the PDU segment payload 911 is transmitted in the subsequent subframe as PDU segment payload 922. Length arrow 913 describes the PDU segment payload total length and points to the beginning of the next VL PDU segment header. Pointer Field (PF) 912 provides direct information regarding the byte position of the beginning of the header of the first full PDU segment in the next subframe.)

Claims 7-8, 28-36, 41, and 44-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) / Heer (US 6,028,933) / Cimini, Jr. (US 7,519,030) further in view of Ketchum et al. - hereinafter Ketchum (US 2005/0135403)

As per claim 7, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 6. Alapuranen fails to disclose wherein division of a sub-frame into the plurality of pieces

comprises dividing the sub-frame into a plurality of sub-blocks, and forming at least some pieces from a plurality of sub-blocks. Ketchum discloses wherein division of a sub-frame into the plurality of pieces comprises dividing the sub-frame into a plurality of sub-blocks, ([0099]-[0100]) and forming at least some pieces from a plurality of sub-blocks. ([0208]-[0210]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose wherein division of a sub-frame into the plurality of pieces comprises dividing the sub-frame into a plurality of sub-blocks, and forming at least some pieces from a plurality of sub-blocks. The motivation for doing so would have been for MAC processing for efficient use of high throughput systems. ([0024])

As per claim 8, Alapuranen / Heer / Cimini, Jr./ Ketchumdisclose the method of claim 7. Alapuranen discloses wherein each piece constitutes a segment that is transmitted as a physical layer block. ([0029]; physical layer packet equated as a low level data unit)

As per claim 28, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 5. Ketchum discloses wherein the stream is divided into a plurality of sub-blocks, wherein a plurality of sub-blocks are grouped to form a segment. (Col 5 line 42-Col 6 line 28, Col 8 line 65-Col 9 line 18) Heer discloses with a segment crossing sub-frame boundaries in the stream, wherein a segment constitutes one of the pieces. (Col 14

lines 31-54; The VL PDU segment header 910 of a segment which has not been completely transmitted within a subframe boundary provides total segment length information about its associated PDU segment payload 911. The total length in this illustrative example is shown to traverse the subframe boundary 920 and the remainder of the PDU segment payload 911 is transmitted in the subsequent subframe as PDU segment payload 922)

As per claim 29, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 28. Ketchum discloses wherein each sub-block is shorter than a sub-frame. ([0099])

As per claim 30, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 8 or 28. Ketchum discloses herein at least some segment contain a number of sub-blocks corresponding to one or more sub-frames including at least one sub-frame whose associated sub-blocks comprise less than the whole sub-frame. ([0099],[0208])

As per claim 31, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 28. Ketchum discloses wherein the sub-blocks are of equal length. ([0208)

As per claim 32, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 28. Ketchum discloses wherein the sub-blocks have an associated sequential numbering adapted for use at the receiving station for re-establishing the correct sequential order of the sub-blocks. ([0096])

As per claim 33, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 32. Ketchum discloses wherein the sub-blocks have a predetermined size, which combined with the associated sequential numbering, eliminates the need for buffer reordering when out of order segments are received. ([0208])

As per claim 34, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 33. Ketchum discloses wherein the sub-blocks are of equal size. ([0212])

As per claim 35, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 8 or 28. Alapuranen discloses further comprising, for at least some of the low level data units, forming the low level data units from a plurality of segments. ([0029])

As per claim 36, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 35. Alapuranen discloses wherein each segment in the low level data unit forms the body of a separate block transmitted by the physical layer. ([0029])

As per claim 41, Alapuranen / Heer / Cimini, Jr. / Ketchumdisclose the method of claim 36. Alapuranen discloses wherein each block separately undergoes forward error correction, and forward error correction bits for each block are transmitted in the low level data unit. ([0028])

As per claim 44, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 36. Alapuranen discloses wherein most of the blocks are identical in length. ([0029])

As per claim 45, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 44. Alapuranen discloses wherein the initial and final block of a low level data unit can be of a different length than the remaining blocks. ([0029])

As per claim 46, Alapuranen / Heer / Cimini, Jr./ Ketchum disclose the method of claim 35. Cimini, Jr. discloses wherein information common to the plurality of segments

forming the low level data unit is transmitted in a header for the low level data unit. (Col 3 line 61-Col 4 line 2)

As per claim 47, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 41. Cimini, Jr. discloses wherein the information common to the plurality of segments is transmitted only in the header. (Col 3 line 61-Col 4 line 2)

As per claim 48, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 41. Cimini, Jr. discloses wherein the low level data unit further comprises a frame control field. (Col 6 lines 27-38)

Claims 9-11, 13 and 49-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) / Heer (US 6,028,933) / Cimini, Jr. (US 7,519,030) further in view of Rakib (US 2002/0015423)

As per claim 9, Alapuranen / Heer / Cimini, Jr disclose the method of claim 1. Alapuranen fails to disclose further comprising parity pieces derived from other pieces and capable of being used at a destination to recover one or more lost pieces at the destination without having to retransmit the lost pieces. Rakib discloses comprising parity pieces derived from other pieces and capable of being used at a destination to

recover one or more lost pieces at the destination without having to retransmit the lost pieces. ([0386]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose recovering one or more lost pieces at the destination without having to retransmit the lost pieces in the disclosure of Yi. The motivation for doing do would have been to reduce the error rate or increase the number of payload bits without increasing the symbol rate and bandwidth consumed. ([0281])

As per claim 10, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of claim 9. Alapuranen discloses wherein each piece is transmitted as a physical layer block, ([0029]) and the parity pieces are also transmitted as parity physical layer blocks. ([0030])

As per claim 11, Alapuranen / Heer / Cimini, Jr./ Rakib disclose the method of claim 10. Alapuranen discloses wherein the physical layer blocks are encoded using forward error correction. ([0030])

As per claim 13, Alapuranen / Heer / Cimini, Jr. disclose the method of claim 12. Rakib discloses wherein at least some retransmitted pieces are transmitted with greater forward error correction than forward error correction used in the earlier attempt.

([0381]; fallback mode where more redundant bits are added to each 4-bit group and correspondingly less payload data in included in each 4 bit group)

As per claim 49, Alapuranen / Heer / Cimini, Jr. disclose the same limitations as recited in claim 1. However, Alapuranen fails to disclose adaptively escalating the robustness of transmission of the low level data units depending on the frequency of transmission errors. Rakib discloses adaptively escalating the robustness of transmission of the low level data units depending on the frequency of transmission errors. ([0381]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to disclose adaptively escalating the robustness of transmission of the low level data units depending on the frequency of transmission errors. The motivation for doing do would have been to reduce the error rate or increase the number of payload bits without increasing the symbol rate and bandwidth consumed. ([0281])

As per claim 50, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of claim 49. Alapuranen discloses the method further comprises incorporating forward-error correction information into the transmitted stream of low level data units. ([0028]) Rakib discloses wherein the step of adaptively escalating comprises adaptively varying the forward-error correction information depending on the frequency of transmission errors. ([0381])

As per claim 51, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of claim 50. Rakib discloses wherein varying the forward-error correction information comprises varying one or both of the amount and type of forward-error correction information. ([0381])

As per claim 52, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of claim 51. Rakib discloses wherein decisions on adaptively escalating are made at a transmitting station. ([0381],[0386])

As per claim 53, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of claim 49. Alapuranen discloses wherein each of the low level data units contains a plurality of the pieces. ([0029])

As per claim 54, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of claim 52. Alapuranen discloses wherein the forward error correction information comprises wherein the forward error correction information comprises information associated with the pieces for use at a destination for recovering a piece that is received with errors. ([0028], [0032])

As per claim 55, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of

claim 52. Rakib discloses herein the forward error correction information comprises parity pieces derived from other pieces and capable of being used at a destination to recover one or more lost pieces at the destination without having to retransmit the lost pieces. ([0386])

As per claim 56, Alapuranen / Heer / Cimini, Jr. / Rakib disclose the method of claim 55. Alapuranen discloses wherein each piece is transmitted as a physical layer block, and the parity pieces are also transmitted as parity physical layer blocks. ([0028],[0029])

Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) / Heer (US 6,028,933) / Cimini, Jr. (US 7,519,030) further in view of Gibson et al. – hereinafter Gibson (US 6,445,717)

As per claim 14, Alapuranen / Heer / Cimini, Jr. discloses the method of claim 5. Alapuranen fails to disclose delivery time stamp. Gibson discloses wherein each sub-frame further comprises a delivery time stamp associated with at least some payloads. (Col 6 line 54 – Col 7 line 5) At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose time stamp. The motivation for doing so would have been to calculate a round trip time. (Col 6 line 54 – Col 7 line 5)

As per claim 15, Alapuranen / Heer / Cimini, Jr. / Gibson disclose the method of claim 5. Alapuranen fails to disclose wherein clock information characterizing the time setting of a clock in a transmitting station is transmitted to a receiving station within a header of the low level data units. Gibson discloses the clock information is used by the receiving station along with the delivery time stamps to establish the time at which payloads are delivered. (Col 6 line 54 – Col 7 line 5) At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to clock information. The motivation for doing so would have been to detect packet loss if expected packets don't arrive in the allowed time. (Col 9 lines 1-23)

As per claim 16, Alapuranen / Heer / Cimini, Jr. / Gibson disclose the method of claim 15. Alapuranen fails to disclose the time a payload is delivered is set by time stamp. Gibson discloses wherein the time at which a payload is delivered is set to be substantially the time specified by the time stamp based on information derived from the clock information. (Col 6 line 54 – Col 7 line 5)

Claim 20-24 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) / Heer (US 6,028,933) / Cimini, Jr. (US 7,519,030) further in view of Krishnamurthy et al.- hereinafter Krishnamurthy (US 2008/0132264)

As per claims 20 and 21, Alapuranen / Heer / Cimini, Jr. discloses the method of claim 4. Alapuranen fails to disclose wherein the MAC layer has the capability of transmitting data in a plurality of sessions within a regularly-repeated contention free interval, wherein a station to which data is transmitted is identified by a destination address and a station from which data is transmitted is identified by a source address, and wherein the stream contains a queue of payloads for the same session, same source address, and same destination address. Krishnamurthy discloses disclose wherein the MAC layer has the capability of transmitting data in a plurality of sessions within a regularly-repeated contention free interval, wherein a station to which data is transmitted is identified by a destination address and a station from which data is transmitted is identified by a source address, and wherein the stream contains a queue of payloads for the same session, same source address, and same destination address. ([0025]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose wherein the MAC layer has the capability of transmitting data in a plurality of sessions within a regularly-repeated contention free interval, wherein a station to which data is transmitted is identified by a destination address and a station from which data is transmitted is identified by a source address, and wherein the stream contains a queue of payloads for the same session, same source address, and same destination address. The motivation would have been to determine when retransmission is appropriate can be based on an interval of time during which no packets are forthcoming, but at least one was expected. ([0025])

As per claim 22, Alapuranen / Heer / Cimini, Jr. / Krishnamurthy discloses the method of claim 20 or 21. Krishnamurthy discloses wherein the MAC layer processes data transmitted in the sessions according to contention-free channel access processing. ([0025])

As per claim 23, Alapuranen / Heer / Cimini, Jr. / Krishnamurthy discloses the method of claim 22. Krishnamurthy discloses wherein the sessions are transmitted within time slots of a regularly-repeated contention-free interval. ([0025])

As per claim 24, Alapuranen / Heer / Cimini, Jr. / Krishnamurthy disclose the method of claim 20 or 21. Alapuranen discloses wherein a stream identifier is used to associate content of a queue with a particular session. ([0009])

As per claim 26, Alapuranen / Heer / Cimini, Jr. / Krishnamurthy disclose the method of claim 24. Alapuranen discloses wherein there are a plurality of queues of payloads in the stream, each containing payloads having a unique combination of stream identifier, ([0009]) source address, and destination address. ([0030])

As per claim 27, Alapuranen / Heer / Cimini, Jr. / Krishnamurthy disclose the method of claim 26. Alapuranen discloses wherein each queue contains payloads having a unique combination of stream identifier, ([0009]) source address,

destination address. ([0030]) Cimini, Jr. discloses type of high level layer. (Col 3 lines 51-60)

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) / Heer (US 6,028,933) / Cimini, Jr. (US 7,519,030) / Krishnamurthy (US 2008/0132264) further in view of Del Prado Pavon et al. – hereinafter Del Prado Pavon (US 2004/0047351)

As per claim 25, Alapuranen / Heer / Cimini, Jr. / Krishnamurthy disclose the method of claim 24. Alapuranen fails to disclose wherein the stream identifier is also used to associate content of a queue with a priority level for contention-based transmission over the medium. Del Prado Pavon discloses wherein the stream identifier is also used to associate content of a queue with a priority level for contention-based transmission over the medium ([0043]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose priority level. The motivation for doing do would have been to have multiple queues that work independently, in parallel, for different priorities. ([0043])

Claims 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) / Heer (US 6,028,933) / Cimini, Jr. et al. – hereinafter

Cimini, Jr. (US 7,519,030) / Ketchum (US 2005/0135403) further in view of Henson et al. – hereinafter Henson (US 2002/0131591)

As per claim 37, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 35. Alapuranen fails to disclose wherein individual segments are individually encrypted. Henson discloses wherein individual segments are individually encrypted ([0108]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose wherein individual segments are individually encrypted. The motivation for doing do would have been to prevent unauthorized user from accessing body of the message or the segments. ([0108])

As per claim 38, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 37. Henson discloses encryption information common to a plurality of segments is carried in a header. [0108].

As per claims 39 and 40, Alapuranen / Heer / Cimini, Jr. / Ketchum/ Henson disclose the method of claim 37. Henson discloses wherein some encryption information is carried in a header and frame control of the low level data unit and in a header of the block. [0108] At the time of invention, it would have been obvious to a person of ordinary skill in the art to use encryption in a header and frame control in the

disclosure of Yi. The motivation would have been to prevent unauthorized user from accessing body of the message or the segments. ([0108])

Claims 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alapuranen (US 2004/0010736) / Heer (US 6,028,933) / Cimini, Jr. (US 7,519,030) / Ketchum (US 2005/0135403) further in view of Rakib (US 2002/0015423)

As per claim 42, Alapuranen / Heer / Cimini, Jr. / Ketchumdisclose the method of claim 41. Alapuranen fails to disclose wherein the level of forward error correction used is different for different blocks. Rakib discloses wherein the level of forward error correction used is different for different blocks. ([0381]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Alapuranen to disclose wherein the level of forward error correction used is different for different blocks. The motivation would have been to effectively manage the noise using conventional error detection and correction bits. ([0027])

As per claim 43, Alapuranen / Heer / Cimini, Jr. / Ketchum disclose the method of claim 42. Rakib discloses wherein the level of forward error correction used provides greater error correction capability for selected blocks that are being retransmitted after failing to be correctly transmitted in an earlier attempt. ([0381])

Claims 57-63 are rejected under 35 U.S.C. 103(a) as being unpatentable Ketchum (US 2005/0135403) in view of Cimini, Jr. (US 7,519,030) / Heer (US 6,028,933)

As per claim 57, Ketchum discloses a method of operating in a network in which a plurality of stations communicate over a shared medium, comprising

providing a physical layer for handling physical communication over the shared medium; ([0023]) providing a high level layer that receives data from a station and supplies high level data units; and providing a layer that receives the high level data units from the high level layer and supplies low level data units to the physical layer; ([0023])

wherein supplying the low level data units comprises encapsulating content from a plurality of the high level data units into a stream of sub-frames, ([0025])

dividing the encapsulated stream into a plurality of sub-blocks, ([0099]-[0100])

forming a plurality of pieces, with each piece including one or more sub-blocks ([0099]-[0100]; [0208]-[0210])

supplying low level data units, ([0209]-[0210]) at least some of the low level data units each containing a plurality of the pieces that include the sub-blocks into which the encapsulated content was divided ([0208]-[0210])

Ketchum fails to disclose to provide pieces capable of being independently retransmitted, and at least some of the low level data units containing boundary demarcation information indicating boundaries between the sub-frames in the stream.

Cimini, Jr. discloses provide pieces capable of being independently retransmitted. (Col 5 lines 43-51)

Heer discloses at least some of the low level data unit containing boundary demarcation information indicating boundaries between the sub-frames in the stream. (Col 14 lines 31-54; The VL PDU segment header 910 of a segment which has not been completely transmitted within a subframe boundary provides total segment length information about its associated PDU segment payload 911. The total length in this illustrative example is shown to traverse the subframe boundary 920 and the remainder of the PDU segment payload 911 is transmitted in the subsequent subframe as PDU segment payload 922)

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Ketchum to disclose provide pieces capable of being independently retransmitted and at least some of the low level data units containing boundary demarcation information indicating boundaries between the sub-frames in the stream. The motivation for doing do would have been to communicate with any other node on the wireless network (Cimini,Jr. ; Col 3 lines 20-35) and for resynchronization after a synchronization loss . (Heer, Col 14 line 63-Col 15 line 7)

As per claim 58, Ketchum / Cimini, Jr. / Heer disclose the method of claim 57. Ketchum discloses wherein a plurality of the plurality of pieces each include a same number of the sub-blocks. ([0208])

As per claim 59, Ketchum / Cimini, Jr. / Heer disclose the method of claim 57. Ketchum discloses wherein at least one of the plurality of pieces includes one or more sub-blocks and padding. ([0208])

As per claim 60, Ketchum / Cimini, Jr. / Heer disclose the method of claim 59 and Ketchum discloses wherein an amount of padding in a piece is selected based on the number of sub-blocks in the piece and the size of the pieces. ([0208])

As per claim 61, Ketchum / Cimini, Jr. / Heer disclose the method of claim 57. Cimini, Jr. discloses wherein the high level data units each comprise a payload, and encapsulating comprises forming the stream comprising the payloads from a succession of high level data units. (Col 3 line 61-Col 4 line 2)

As per claim 62, Ketchum / Cimini, Jr. /Heer disclose the method of claim 61, and Cimini, Jr. discloses wherein the stream comprises a succession of sub-frames, each sub-frame comprising a header and a plurality of the payloads. (Col 3 line 61-Col 4 line 2)

As per claim 63, Ketchum / Cimini, Jr. / Heer disclose the method of claim 62. Cimini, JR. discloses wherein each sub-frame is divided into the plurality of pieces capable of being independently retransmitted. (Col 5 lines 43-51)

Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ketchum (US 2005/0135403) / Cimini, Jr. (US 7,519,030) / Heer (US 6,028,933) further in view of Alapuranen (US 2004/0010736)

As per claim 64, Ketchum / Cimini, Jr. / Heer disclose the method of claim 63 Ketchum discloses wherein division of a sub-frame into the plurality of pieces comprises dividing the sub-frame into the plurality of sub-blocks and forming at least some pieces from a plurality of sub-blocks. ([0208]) Ketcum fails to disclose wherein division of a sub-frame into the plurality of pieces comprises dividing the sub-frame into the plurality of sub-blocks of equal size, and forming at least some pieces from a plurality of sub-blocks. Alapuranen discloses diving the sub-frames into equal sizes. ([0029]) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Ketchum to disclose wherein division of a sub-frame into the plurality of pieces comprises dividing the sub-frame into the plurality of sub-blocks of equal size, and forming at least some pieces from a plurality of sub-blocks. The motivation would have been to locate any failed segments, and retransmit erroneous segments multiple times per media access control (MAC) transaction. ([0015])

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hagiwara (US 5,629,948) is directed to an ARQ data

transmission scheme in which the overhead due to the ARQ control data is reduced to resolve the problem of the throughput deterioration.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag R Patel whose telephone number is (571)272-7966. The examiner can normally be reached on Monday to Friday from 8:00AM to 4:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn, can be reached on (571) 272-1915.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/C. R. P./
Examiner, Art Unit 2454

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